Washington State Institute for Public Policy

Benefit-Cost Results

Eye Movement Desensitization and Reprocessing (EMDR) for adult posttraumatic stress disorder (PTSD)

Adult Mental Health: Trauma

Benefit-cost estimates updated December 2016. Literature review updated September 2016.

Current estimates replace old estimates. Numbers will change over time as a result of model inputs and monetization methods.

The WSIPP benefit-cost analysis examines, on an apples-to-apples basis, the monetary value of programs or policies to determine whether the benefits from the program exceed its costs. WSIPP's research approach to identifying evidence-based programs and policies has three main steps. First, we determine "what works" (and what does not work) to improve outcomes using a statistical technique called meta-analysis. Second, we calculate whether the benefits of a program exceed its costs. Third, we estimate the risk of investing in a program by testing the sensitivity of our results. For more detail on our methods, see our Technical Documentation.

Program Description: Eye Movement Desensitization and Reprocessing (EMDR) is a psychological treatment commonly used to treat posttraumatic stress disorder. During treatment, clients focus on the traumatic memory for 30 seconds at a time while the therapist provides a stimulus. For most clients, the therapist moves a hand slowly back and forth in front of the client (eye movement) but other stimuli may be used. Clients report on what thoughts come up and are guided to refocus on that thought in the next stimulus session. During therapy visits, clients report the level of distress they feel. In later phases, a positive thought is emphasized during the stimulus sessions. Afterward, clients are asked to focus on residual physical tensions they may feel in order to enhance relaxation. A more complete description of this therapy is available at: http://www.emdrnetwork.org/description.html

We evaluated studies where EMDR was used in the treatment of PTSD confirmed by a diagnosis using the criteria of the Diagnostic and Statistical Manual of Mental Disorders (DSM). Studies consisted of patients with a variety of traumatic experiences, including combat, sexual abuse or assault, physical or emotional abuse, accidents, and war or disaster experiences. We only included studies where EMDR was compared to a control condition receiving treatment as usual, which consisted of standard care or a wait list for care. One study was included in which patients had comorbid psychosis disorder. Patients in the studies received between two and twelve total sessions of EMDR.

Benefit-Cost Summary Statistics Per Participant

Benefits to:

Taxpayers	$13,016
Participants	$22,793
Others	$3,874
Indirect	$1,527
Total benefits	$41,210
Net program cost	($69)
Benefits minus cost	$41,141

Benefit to cost ratio	$599.10
Benefits minus costs	$41,141
Chance the program will produce benefits greater than the costs	100 %

The estimates shown are present value, life cycle benefits and costs. All dollars are expressed in the base year chosen for this analysis (2015). The chance the benefits exceed the costs are derived from a Monte Carlo risk analysis. The details on this, as well as the economic discount rates and other relevant parameters are described in our Technical Documentation.

Detailed Monetary Benefit Estimates Per Participant

Benefits from changes to:[1]	Benefits to:				
	Participants	Taxpayers	Others[2]	Indirect[3]	Total
Labor market earnings associated with PTSD	$21,774	$9,888	$0	$0	$31,662
Health care associated with PTSD	$1,019	$3,128	$3,874	$1,561	$9,583
Adjustment for deadweight cost of program	$0	$0	$0	($34)	($34)
Totals	$22,793	$13,016	$3,874	$1,527	$41,210

[1]In addition to the outcomes measured in the meta-analysis table, WSIPP measures benefits and costs estimated from other outcomes associated with those reported in the evaluation literature. For example, empirical research demonstrates that high school graduation leads to reduced crime. These associated measures provide a more complete picture of the detailed costs and benefits of the program.

[2]"Others" includes benefits to people other than taxpayers and participants. Depending on the program, it could include reductions in crime victimization, the economic benefits from a more educated workforce, and the benefits from employer-paid health insurance.

[3]"Indirect benefits" includes estimates of the net changes in the value of a statistical life and net changes in the deadweight costs of taxation.

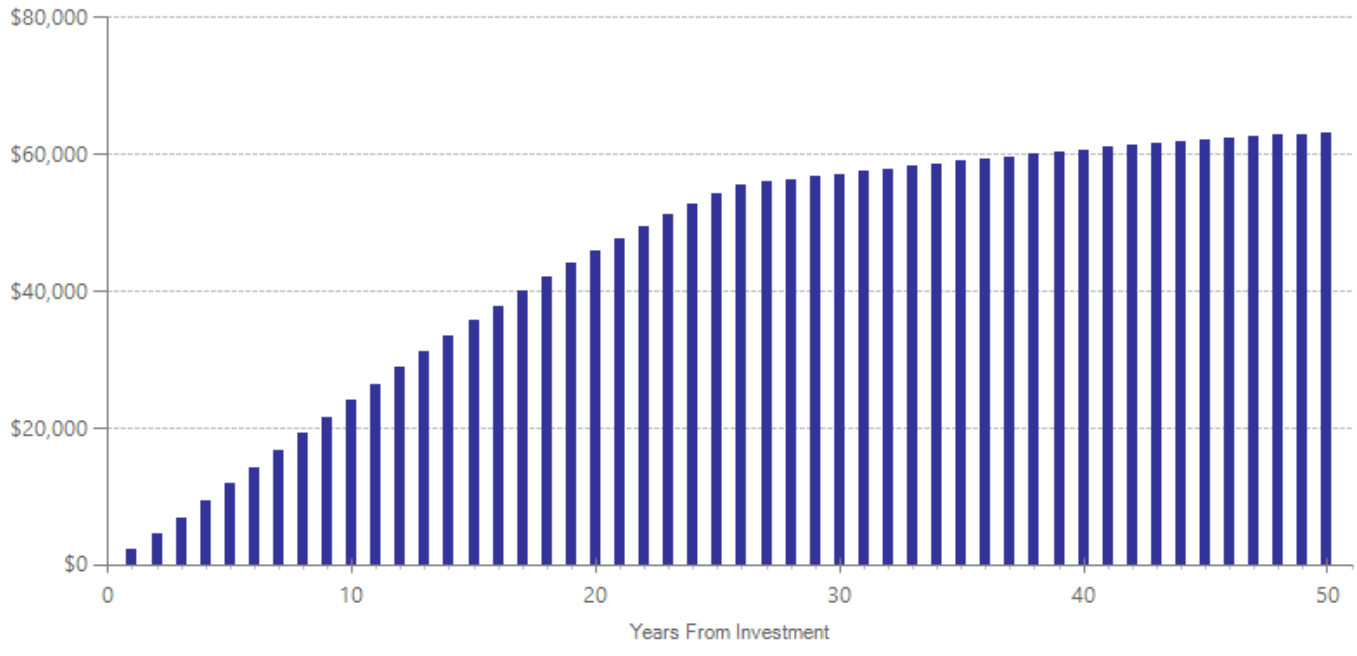
Detailed Annual Cost Estimates Per Participant

	Annual cost	Year dollars	Summary	
Program costs	$974	2014	Present value of net program costs (in 2015 dollars)	($69)
Comparison costs	$830	2008	Cost range (+ or -)	10 %

Per-participant costs for EMDR are estimated based on the average hours of therapy reported in the studies (7.96) and the rate for individual therapy for non-disabled adults reported in Mercer (2013) Behavioral Health Data Book for the State of Washington For Rates Effective January 1, 2014.
The comparison group costs are from the average Medicaid expenditures for PTSD treatment in Washington in 2014.

The figures shown are estimates of the costs to implement programs in Washington. The comparison group costs reflect either no treatment or treatment as usual, depending on how effect sizes were calculated in the meta-analysis. The cost range reported above reflects potential variation or uncertainty in the cost estimate; more detail can be found in our Technical Documentation.

Detailed Annual Cost Estimates Per Participant



The graph above illustrates the estimated cumulative net benefits per-participant for the first fifty years beyond the initial investment in the program. We present these cash flows in non-discounted dollars to simplify the "break-even" point from a budgeting perspective. If the dollars are negative (bars below $0 line), the cumulative benefits do not outweigh the cost of the program up to that point in time. The program breaks even when the dollars reach $0. At this point, the total benefits to participants, taxpayers, and others, are equal to the cost of the program. If the dollars are above $0, the benefits of the program exceed the initial investment.

Meta-Analysis of Program Effects

Outcomes measured	No. of effect sizes	Treatment N	Adjusted effect sizes and standard errors used in the benefit-cost analysis						Unadjusted effect size (random effects model)	
			First time ES is estimated			Second time ES is estimated				
			ES	SE	Age	ES	SE	Age	ES	p-value
Anxiety disorder	4	72	-0.305	0.207	41	-0.305	0.207	42	-0.659	0.009
Major depressive disorder	6	111	-0.333	0.157	41	-0.333	0.157	42	-0.333	0.001
Global functioning	2	42	0.201	0.281	41	0.209	0.281	42	0.613	0.362
Post-traumatic stress	11	225	-0.460	0.134	41	-0.460	0.134	42	-0.730	0.001

Meta-analysis is a statistical method to combine the results from separate studies on a program, policy, or topic in order to estimate its effect on an outcome. WSIPP systematically evaluates all credible evaluations we can locate on each topic. The outcomes measured are the types of program impacts that were measured in the research literature (for example, crime or educational attainment). Treatment N represents the total number of individuals or units in the treatment group across the included studies.

An effect size (ES) is a standard metric that summarizes the degree to which a program or policy affects a measured outcome. If the effect size is positive, the outcome increases. If the effect size is negative, the outcome decreases.

Adjusted effect sizes are used to calculate the benefits from our benefit cost model. WSIPP may adjust effect sizes based on methodological characteristics of the study. For example, we may adjust effect sizes when a study has a weak research design or when the program developer is involved in the research. The magnitude of these adjustments varies depending on the topic area.

WSIPP may also adjust the second ES measurement. Research shows the magnitude of some effect sizes decrease over time. For those effect sizes, we estimate outcome-based adjustments which we apply between the first time ES is estimated and the second time ES is estimated. We also report the unadjusted effect size to show the effect sizes before any adjustments have been made. More details about these adjustments can be found in our Technical Documentation.

Citations Used in the Meta-Analysis

Boudewyns, P.A., Stwertka, S.A., Hyer, L.A., Albrecht, J.W., & Sperr, E.V. (1993). Eye movement desensitization for PTSD of combat: A treatment outcome pilot study. *The Behavior Therapist, 16*(2), 29-33.

Carlson, J.G., Chemtob, C.M., Rusnak, K., Hedlund, N.L., & Muraoka, M.Y. (1998). Eye Movement Desensitization and Reprocessing (EDMR) treatment for combat-related posttraumatic stress disorder. *Journal of Traumatic Stress, 11*(1), 3-24.

Hogberg, G., Pagani, M., Sundin, O., Soares, J., Aberg-Wistedt, A., Tarnell, B., & Hallstrom, T. (2007). On treatment with eye movement desensitization and reprocessing of chronic post-traumatic stress disorder in public transportation workers—A randomized controlled trial. *Nordic Journal of Psychiatry, 61*(1), 54-61.

Jensen, J.A. (1994). An investigation of eye movement desensitization and reprocessing (EMD/R) as a treatment for posttraumatic stress disorder (PTSD) symptoms of Vietnam combat veterans. *Behavior Therapy, 25*(2), 311-325.

Johnson, D.R., & Lubin, H. (2006). The counting method: Applying the rule of parsimony to the treatment of posttraumatic stress disorder. *Traumatology, 12*(1), 83-99.

Marcus, S.V., Marquis, P., & Sakai, C. (1997). Controlled study of treatment of PTSD using EMDR in an HMO setting. *Psychotherapy: Theory, Research, Practice, Training, 34*(3), 307-315.

Rothbaum, B.O., Austin, M.C., & Marsteller, F. (2005). Prolonged exposure versus eye movement desensitization and reprocessing (EMDR) for PTSD rape victims. *Journal of Traumatic Stress: Publ. for the Society for Traumatic Stress Studies, 18*(6), 607-616.

Rothbaum, B.O. (1997). Acontrolled study of eye movement desensitization and reprocessing in the treatment of posttraumatic stress disordered sexual assault victims. *Bulletin of the Menninger Clinic, 61*(3), 317-334.

Taylor, S., Thordarson, D.S., Maxfield, L., Fedoroff, I.C., Lovell, K., & Ogrodniczuk, J. (2003). Comparative efficacy, speed, and adverse effects of three PTSD treatments: exposure therapy, EMDR, and relaxation training. *Journal of Consulting and Clinical Psychology, 71*(2), 330-338.

van den Berg, D.P.G., de Bont, P.A.J.M, Berber M.v.d.V, de Roos, C., de Jongh, A., Van Minnen, A., & van der Gaag, M. (2015). Prolonged exposure vs eye movement desensitization and reprocessing vs waiting list for posttraumatic stress disorder in patients with a psychotic disorder: a randomized clinical trial. *Jama Psychiatry, 72*(3), 259-67.

van der Kolk, B.A., Spinazzola, J., Blaustein, M.E., Hopper, J.W., Hopper, E.K., Korn, D.L., & Simpson, W.B. (2007). A randomized clinical trial of eye movement desensitization and reprocessing (EMDR), fluoxetine, and pill placebo in the treatment of posttraumatic stress disorder: treatment effects and long-term maintenance. *The Journal of Clinical Psychiatry, 68*(1), 37-46.